

2.1 Inductive Reasoning and Conjecture

Conjecture-educated guess based on known information

Inductive reasoning-reasoning using a # of examples to make a prediction

Patterns:

Ex 1: 1, 3, 6, 10, 15, 21

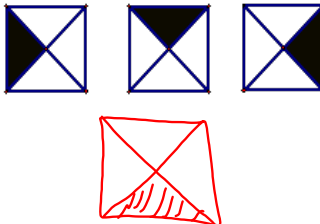
Ex 2: A, B, B, C, C, C, D, D, D, D, E, E, E, E, E

Ex 3: $1 \times 9 + 2 = 11$
 $12 \times 9 + 3 = 111$
 $123 \times 9 + 4 = 1111$

$1234 \times 9 + 5 = 11111$

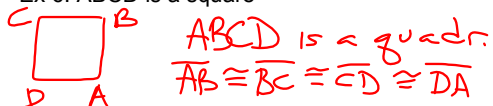
Ex 4: 3, 5, 7, 9

Ex 5:



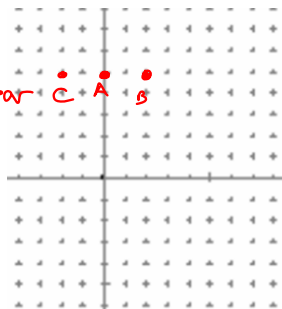
Make a conjecture based on the given information.

Ex 6: ABCD is a square



Ex 7: A(0,5) B(2, 5) C(-2, 5)

A, B, & C are collinear



Counterexample-one false example that shows a conjecture is not true

Determine whether each conjecture is *true* or *false*. Give a counterexample for any false conjecture.

8. Given: x is an integer.

Conjecture: $-x$ is negative.

False $x = -3$

9. Given: WXYZ is a rectangle.

Conjecture: $WX = YZ$ and $WZ = XY$



True

Make a conjecture about the next item in each sequence.



5. $-8, -5, -2, 1, 4$

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Make a conjecture about the next item in each sequence.

11.



13. 1, 2, 4, 8, 16

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15. $\frac{1}{3}, 1, \frac{5}{3}, \frac{7}{3}, 3$

$\frac{3}{3}, \frac{9}{3}, \frac{11}{3}$

Determine whether each conjecture is *true* or *false*. Give a counterexample for any false conjecture.

29. ~~Given: $\angle 1$ and $\angle 2$ are complementary angles.~~

~~Conjecture: $\angle 1$ and $\angle 2$ form a right angle.~~

30. Given: $m + y \geq 10, y \geq 4$

Conjecture: $m \leq 6$

False
 $m = 20$

$$m + 4 \geq 10$$

$$m \geq 6$$

$$m + 8 \geq 10$$

$$m \geq 2$$

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#s 12, 14, 16, 24,

29, 31, 33, 34, 35